Chart 5

Evaluation of active TSPs containing inorganic or organic compounds against HD liquid using HS-SPME-GC/MS. In this module significant efficacy was seen against HD in all active TSPs tested.

Possible neutralization pathways of these organic compounds were probed using NMR with CEES as an HD simulant. In these experiments, IBDA (ICD 2902) was suspended in Y25 oil (2.5% by weight), the simulant (CEES) was added, and the suspension was stirred under ambient conditions for 12 to 24 hours. NMR spectra were then obtained using gradient multi-quantum coherence spectrometry (g-HMQC) and 1H NMR to monitor the neutralization of CEES (FIG. **3**).

Thus, IBDA reacts with CEES to give not only the non-toxic sulfoxide, but also the toxic sulfone. This reaction is also evident by visual examination of the IBDA suspension before (top, FIG. **4**) and 24 hours after addition of CEES (bottom, FIG. **4**).

The performance of the active TSPs containing IBDA or XE-555 Resin in the penetration cell was reflected the weanling pig model at short exposure times (Chart 6).

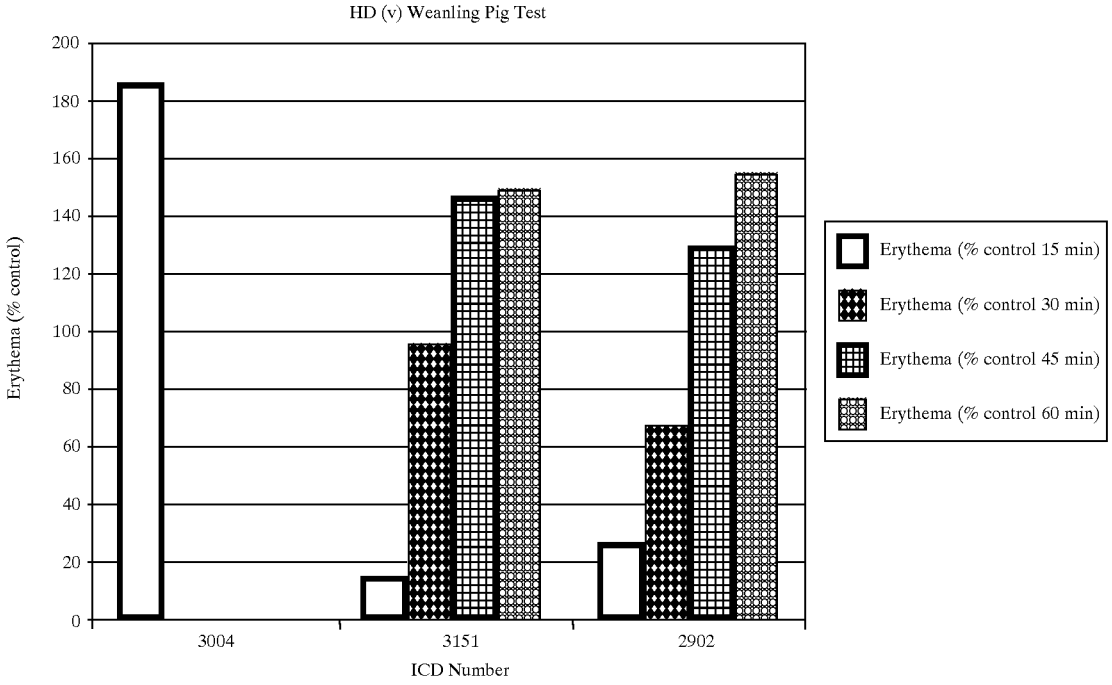

Chart 6

Results of active TSPs containin XE555 resin (ICD 3151) and IBDA (ICD 2902). Controls are all 15min exposures with no TSP

Since the active TSPs containing IBDA reduced the cumulative amount of HD vapor in the penetration cell by between 90 and 99% (Chart 4), it satisfying to see the results reflected in the recorded erythema from HD vapor with a 15-minute exposure time. However, when the exposure time is increased, the observed protection is degraded. Thus, at 30 minutes only the IBDA formulation has significant protection, and at 45 and 60 minutes, no protection is offered. These data may be due to saturation of the XE-555 resin or the IBDA in the active TSP. Furthermore, this is not unexpected because neither compound is catalytic (see Scheme 2, 3). On the other hand, it is possible that the neutralization products (i.e., HD sulfone) may be causing the increase in erythema.

Having now fully described the invention, it will be apparent to one of ordinary skill in the art that many changes and modifications can be made thereto without departing from the spirit or scope of the invention as set forth herein thereto without departing from the spirit or scope of the invention as set forth herein

What is claimed is:

1. A topical skin protectant formulation for neutralizing chemical warfare agents into less toxic products comprising: a barrier base cream; and one or more Iodobenzene Diacetate; High Test Hypochlorite; Chloramine T; Chloramine B; active carbon; XE555 resin; Potassium O,O'-Dibutanylphosphorodithioate; and Potassium O,O'-Dibutanylphosphorodithioate as an active moiety.

2. The topical skin protectant formulation of claim **1**, wherein the base cream comprises poly(tetrafluoroethylene) resins dispersed in perfluorinated polyether oils.

3. A topical skin protectant formulation for neutralizing chemical warfare agents into less toxic products comprising:

(a) a barrier base cream, said barrier base cream comprising poly(tetrafluoroethylene) resins dispersed in perfluorinated polyether oils; and

(b) one or more active moieties selected from the group consisting of: Iodobenzene Diacetate; High Test Hypochlorite; Chloramine T; Chloramine B; active carbon; XE555 resin; and Potassium O,O'-Dibutanylphosphorodithioate; and Potassium O,O'-Dioctanylphosphorodithioate.

4. The topical skin protectant formulation of claim **3**, further comprising one or more additives.

5. The topical skin protectant formulation of claim **4**, wherein said additives comprise one or more of water, surfactant, stabilizers, camouflage paints, and sunscreens.

6. A topical skin protectant formulation for neutralizing chemical warfare agents into less toxic products comprising:

(a) a barrier base cream, said barrier base cream comprising poly(tetrafluoroethylene) resins dispersed in perfluorinated polyether oils;